

### **Abstract of the Disclosure**

In a sequence of medical image data showing tumors and blood vessels, a plasma signal is optimized to avoid flow artifacts by receiving a user input of a blood region and using the user input to seed an automated search. Each voxel is scored by time point of maximum intake, slope at maximum intake, peak value and conformance to a gamma variate curve, and the voxels with the highest scores are included in the ideal plasma region of interest. Uptake curves for both tumors and plasma are determined and used to estimate a volume transfer constant.